Overview of the Office of Electricity's Energy Storage Science & Technology Activities

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Advanced Power Sources R&D

Sandia National Laboratories

Albuquerque, New Mexico, USA

OE Peer Review

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Overview of OE ESS Program Management Structure

- **Dr. Imre Gyuk**
  Program Manager, Department of Energy
  Office of Electricity Delivery and Reliability (OE)

- **Sandia National Laboratories**
  Ross Guttromson, Program Manager
- **Pacific Northwest National Laboratory**
  Dr. Landis Kannberg, Program Manager
  Dr. Z. Gary Yang, Laboratory Fellow
- **Oak Ridge National Laboratory**

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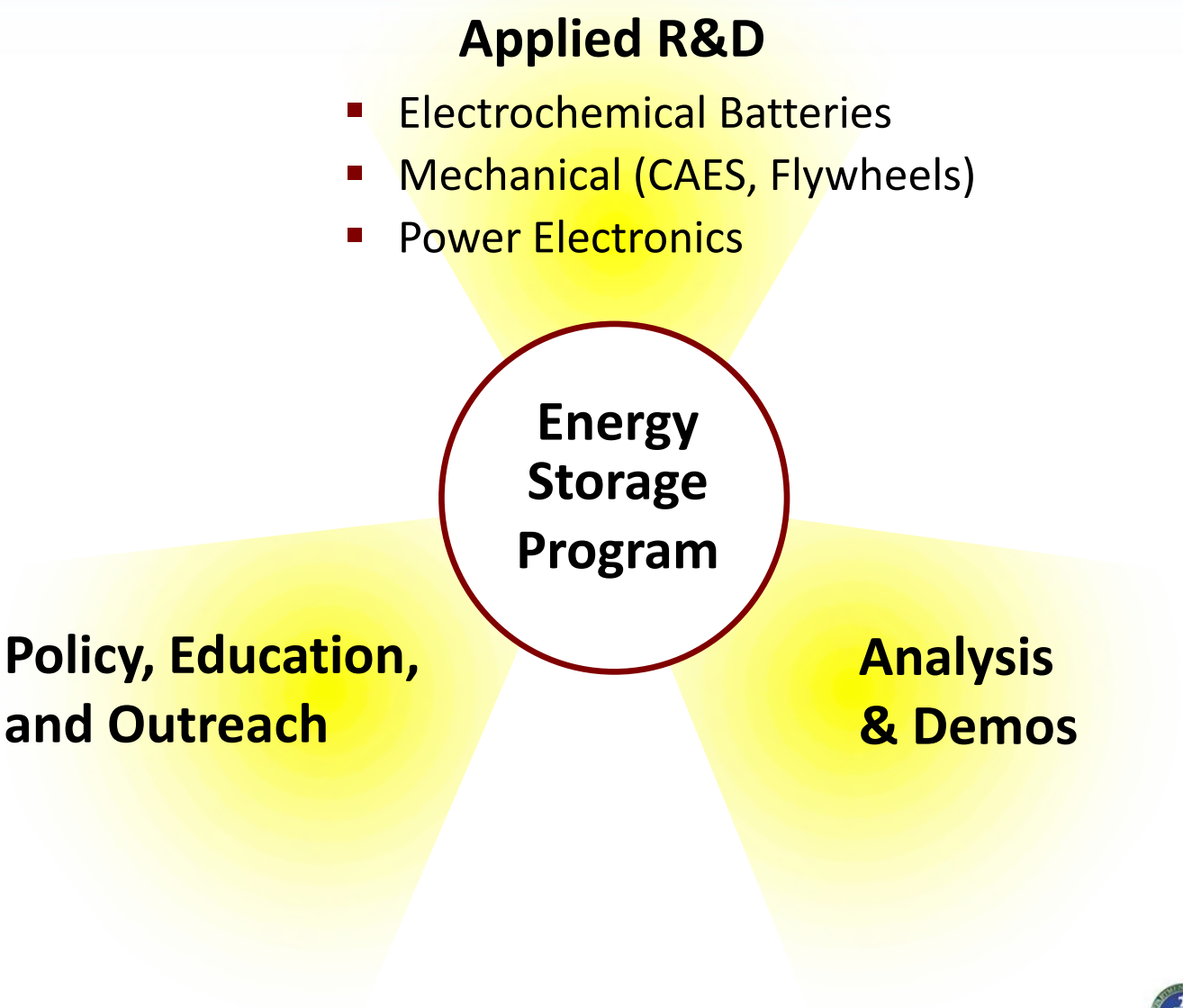
OE Energy Storage Program Focus Areas



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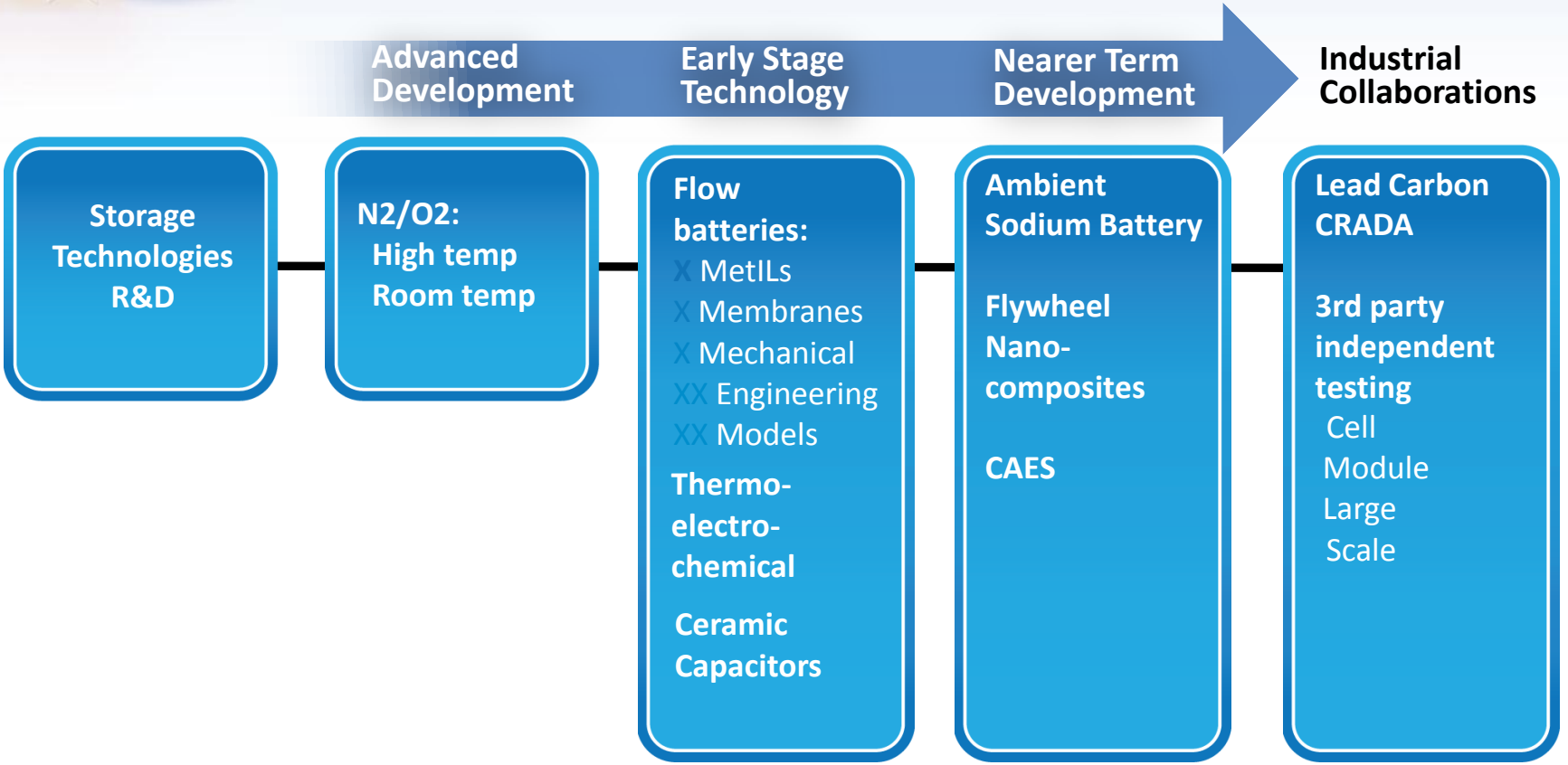
Overview of Development Activities at Sandia



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Highlights of ESS Program

Coordinated Sub-Programs on Flow and Sodium Batteries

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	Early Stage	Nearer Term
Flow Batteries	Electroactive Electrolytes "MetILs"	Improving VRB Electrolytes
	Membrane Development	Component Modification
	Mechanical Modeling	Testing Facility—Standards Development
Sodium Battery	**Room Temperature**	**High Temperature**
	NaSICON based efforts	β"-Al_2O_3 based efforts
	Family of cathodes	Reduced temperature

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OE University Solicitation for ESS Technologies

$2.4M awarded in 2-stage national proposal selection process

Peer Review panel consisted of industry, academic, and government energy storage experts

Requirement to demonstrate a bench-scale prototype of technology

PI	University	Co-PI	Technology Area
Esther S. Takeuchi	University at Buffalo NY	**Ken Takeuchi**	Multivalent ion cathodes
Austen Angell	Arizona State University	**S. W. Martin,** Iowa State University	Ambient Temperature Sodium Batteries
Jesse S. Wainright	Case Western Reserve University	**U. Landau**, CWRU **R. Savinell**, CWRU	All-Iron Flow Battery
Bruce Dunn	UCLA	**Y. Gogotsi**, Drexel University	Electrochemical Capacitors